All pending claims are provided in Appendix I for the Examiner's convenience.

1. (once amended) An isolated nucleic acid encoding a polypeptide monomer of a pH sensitive potassium channel, the monomer:

[(i) having a calculated molecular weight of between 120-156 kDa;]

[(ii)] (i) having a unit conductance of approximately 80-120 pS when the monomer is in a functional tetrameric form of a potassium channel and is expressed in a *Xenopus* oocyte;

[(iii)] (ii) having increased activity above approximately intracellular pH of 7.1; and

[(iv)] (iii) specifically binding to polyclonal antibodies generated against a polypeptide comprising an amino acid sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:16, or SEQ ID NO:18.

6. (once amended) An isolated nucleic acid of claim 1, wherein the nucleic acid selectively hybridizes under moderate stringency hybridization conditions, which end with a wash step at 45°C in a solution comprising 1x SSC, to a nucleic acid comprising a nucleotide sequence of SEQ ID NO:2.

7. (once amended) An isolated nucleic acid of claim 1, wherein the nucleic acid selectively hybridizes under moderate stringency hybridization conditions, which end with a wash step at 45°C in a solution comprising 1x SSC, to a nucleic acid comprising a nucleotide sequence of SEQ ID NO:4, SEQ ID NO:17, or SEQ ID NO:19.

12. (once amended) An isolated nucleic acid encoding at least [15] 25 contiguous amino acids from a [pH sensitive potassium channel] polypeptide [monomer, said monomer] having an amino acid sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:16,

SEQ ID NO:18[and conservatively modified variants thereof]; wherein the nucleic acid encodes a pH sensitive potassium channel polypeptide monomer.

13. (once amended) The isolated nucleic acid of claim 12,

wherein said nucleic acid encodes a pH sensitive potassium channel polypeptide monomer having:

(i) a unit conductance of 80-120 pS when the monomer is in a functional tetrameric form of a potassium channel and is expressed in a *Xenopus* oocyte; and

[(ii) a molecular weight of between 120-156 kDa; and]

[(iii)] (ii) increased activity above an intracellular pH of 7.1;

wherein said nucleic acid [either:

(i)] selectively hybridizes under moderate stringency hybridization conditions, which end with a wash step at 45°C in a solution comprising 1x SSC, to a nucleic acid comprising a nucleotide sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:17, SEQ ID NO:19[; or

(ii) encodes a protein which [could be] is encoded by a nucleic acid that selectively hybridizes under moderate stringency hybridization conditions, which end with a wash step at 45°C in a solution comprising 1x SSC, to a nucleic acid comprising a nucleotide sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:17, SEQ ID NO:19].

a3 cont.

Sub c4

14. (once amended) An isolated nucleic acid encoding a polypeptide monomer of a pH sensitive potassium channel, the [sequence] monomer:

(i) [encoding a monomer] having a core domain that has greater than 60% amino acid sequence identity to a polypeptide comprising amino acids 35-641 of [a Slo3 core domain] SEQ ID NO:1 as measured using a sequence comparison algorithm;[and

(ii) specifically binding to polyclonal antibodies raised against the core domain of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:16, or SEQ ID NO:18]

a3 cont

(ii) having a unit conductance of approximately 80-120 pS when the monomer is in a functional tetrameric form of a potassium channel and is expressed in a Xenopus oocyte; and

(iii) having increased activity above approximately intracellular pH of 7.1.

Sub C5

26. (once amended) An expression vector comprising a nucleic acid encoding a polypeptide monomer of a pH sensitive potassium channel, the monomer:

[(i) having a calculated molecular weight of between 120-156 kDa;]

[(ii)] (i) having a unit conductance of approximately 80-120 pS when the monomer is in a functional tetrameric form of a potassium channel and is expressed in a *Xenopus* oocyte;

a4

[(iii)] (ii) having increased activity above approximately intracellular pH of 7.1; and

[(iv)] (iii) specifically binding to polyclonal antibodies generated against a polypeptide comprising an amino acid sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:16, or SEQ ID NO:18.

Sub C6

45. (new) The nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide monomer having a calculated molecular weight of between 120-156 kDa.

46. (new) The nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide monomer forming a homomeric potassium channel.

a5

47. (new) The nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide monomer forming a heteromeric potassium channel.

Sub C8

48. (new) An isolated nucleic acid encoding a polypeptide monomer of a pH sensitive potassium channel, the monomer:

(i) having a unit conductance of approximately 80-120 pS when the monomer is in a functional tetrameric form of a potassium channel and is expressed in a *Xenopus* oocyte; and

(ii) having increased activity above approximately intracellular pH of 7.1; wherein said nucleic acid selectively hybridizes under highly stringent hybridization conditions, which end with a wash step at 65°C in a solution comprising 0.2x SSC and 0.1% SDS, to a nucleic acid comprising a nucleotide sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:17, SEQ ID NO:19.

a5 cont

REMARKS

With this amendment, claims 1-16, 26, 27, and 45-48 are pending in the application. Claims 1-16, 26, and 27 have been examined. Claims 17-25 and 28-44, drawn to a non-elected invention, are withdrawn from consideration. All pending claims are provided in Appendix I for the Examiner's convenience. The rejections are addressed in the order in which they were presented in the April 10, 2000 Office Action.

Status of the claims

Claims 6, 7, and 13 were amended to recite hybridization conditions that end with a wash step "at 45°C in a solution comprising 1x SSC." This amendment adds no new matter. Support for this amendment can be found, e.g., in the specification on page 24, lines 12-14.

Claim 12 was amended to recite an nucleic acid encoding at least "25" contiguous amino acids. This amendment adds no new matter. Support for this amendment can be found, e.g., in the specification on page 20, lines 10-12.

Claim 14 was amended to recite "amino acids 35-641 of SEQ ID NO:1." This amendment adds no new matter. Support for this amendment can be found, e.g., in the specification on page 14, lines 4-5.